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# SUN RIVER SOIL CONSERVATION DISTRICT

Cascade County, Montana

November, 1955

## *10 Years of Progress*



View of Sun River Valley

**Security**

**Through**

**Conservation**

**SOIL CONSERVATION LEADS TO PROSPERITY**



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Map of Sun River Soil Conservation District.

A tabulation showing some of the soil and water conservation practices performed in the District the past ten years:

Practice	Unit	To-Date
Land Leveling	Acres	6,540
New Land Under Irrigation	"	2,606
Improved Water Application	"	12,232
Farm Drains	Miles	45
Acres Benefited by Drains	Acres	4,536
Land Clearing	"	522
Supply Ditches	Miles	108
Irrigation Pumps	Number	40

All Photos and Map Courtesy Soil Conservation Service.





Left to Right: Jensen, Ogden, Cook, Zeller, Sanborn, Theo. Fosse (County Agent), Merle Brunsvold (S.C.S.)

### GREETINGS FROM THE BOARD OF SUPERVISORS

The Sun River Soil Conservation District is a legal subdivision of the State of Montana organized under the Soil Conservation Act of 1939 which provides for voluntary action, home rule and the protection of the individual's rights and independence.

The district was formed in 1944 to enable co-operators to secure technical assistance in carrying out the soil and water conservation practices required to improve their land. Its original area was 18,800 acres but this was increased to 127,654 acres by five additions during 1945 and 1946.

After the election of the first board of supervisors, assistance was asked from the Soil Conservation Service of the United States Department of Agriculture. The request was granted and technical assistance has been supplied to all co-operating farmers in the district from the S.C.S. office in Great Falls ever since. The Extension Service has helped with the educational program and the Farmers Home Administration and the Agricultural Stabilization and Conservation Committee have assisted in financing approved practices.

This report is being issued by the board to show the main accomplishments in land improvement through the planning and application of approved conservation practices during the district's first 10 years of operation, also to point up some of the problems for the future. It is our sincere hope that it will bring about more interest and activity as there is still much to be done.

### BOARD OF SUPERVISORS

<u>John J. Zeller</u>	Chairman
<u>W. D. Ogden</u>	Vice Chairman
<u>Fred Sanborn</u>	Secy-Treas.
<u>Leonard Cook</u>	Supervisor
<u>Clinton Jensen</u>	Supervisor





Brent Weight, S.C.S. Making Soil Survey for Farm Conservation Plan.



William Leoch, Former, and Merle Brunsvold, Work Unit Conservationist, Developing Conservation Plan.





**Richard Leisher and Herbert Zimmerman Surveying a Field for Land Leveling.**

### CONSERVATION FARM PLANS

Conservation plans for each farm are a part of the District program. The plan, which is an agreement between the farmer and the District, provides for various alternatives in the treatment and use of the land according to its needs and capabilities. To obtain technical assistance a farmer makes application to the Board of Supervisors. A technician from the Soil Conservation Service then makes a soil survey of his farm. The soil survey is an inventory of the soil resources and tells what the land is best suited for and the conservation practices needed.

Using the soils information, a conservation farm plan is drawn up by the technician and farmer. The farmer decides which land use and conservation practices he wants to apply to his farm and arranges with the SCS technician for engineering and other assistance needed. This assistance enables the farmer to do complex jobs, such as land leveling, drainage and reorganization of irrigation systems, that he could not otherwise do. The above photo shows SCS technicians surveying a field on the Robinson Bros. farm for land leveling.

Other photos show SCS soil scientist gathering data for soil survey and technician and farmer looking over map in the process of drawing up a conservation plan. To date 234 farmers have made application to the District and 191 conservation plans have been developed. The Board of Supervisors hopes that every farmer in the District will make application for a conservation plan and apply the needed practices to his farm.





**The Field Before Leveling.**



**Same Land After Leveling.**

### LAND LEVELING

Most of the irrigated land within the district was too uneven for effective irrigation. After every heavy application of water too much had been applied in some places and too little in others, resulting in decreased crop yields.

The leveling of the fields to enable irrigation water to be applied evenly has thus been one of the major endeavors of the district. Grading the fields to remove the high and low spots and installing border dikes to permit easier water application has increased crop production and lowered costs.

Since the program started there have been 6,540 acres of irrigated land leveled and the bulk of this is also border diked. The two pictures on this page show a field of the McIver ranch before it was leveled and afterwards. There is still much land in the district which needs leveling but, at least, a good start has been made.





**Land Reclaimed on Sanborn Farm Operated by Christensen Brothers. Shallow Drain Ditch, Approximately Four Feet in Depth, Worked Well in This Case.**



**Deep Drain (8 Feet Deep) on Skeie Farm West of Fort Shaw. The Ditch Was Installed by the Fort Shaw Irrigation District.**

## **DRAINAGE**

Poor drainage is another major problem in the Sun River Soil Conservation District. The wild flooding method of irrigation was used entirely for many years and little attention paid to the removal of excess water, resulting in high water tables and alkalinity of much land which did not have good natural drainage.

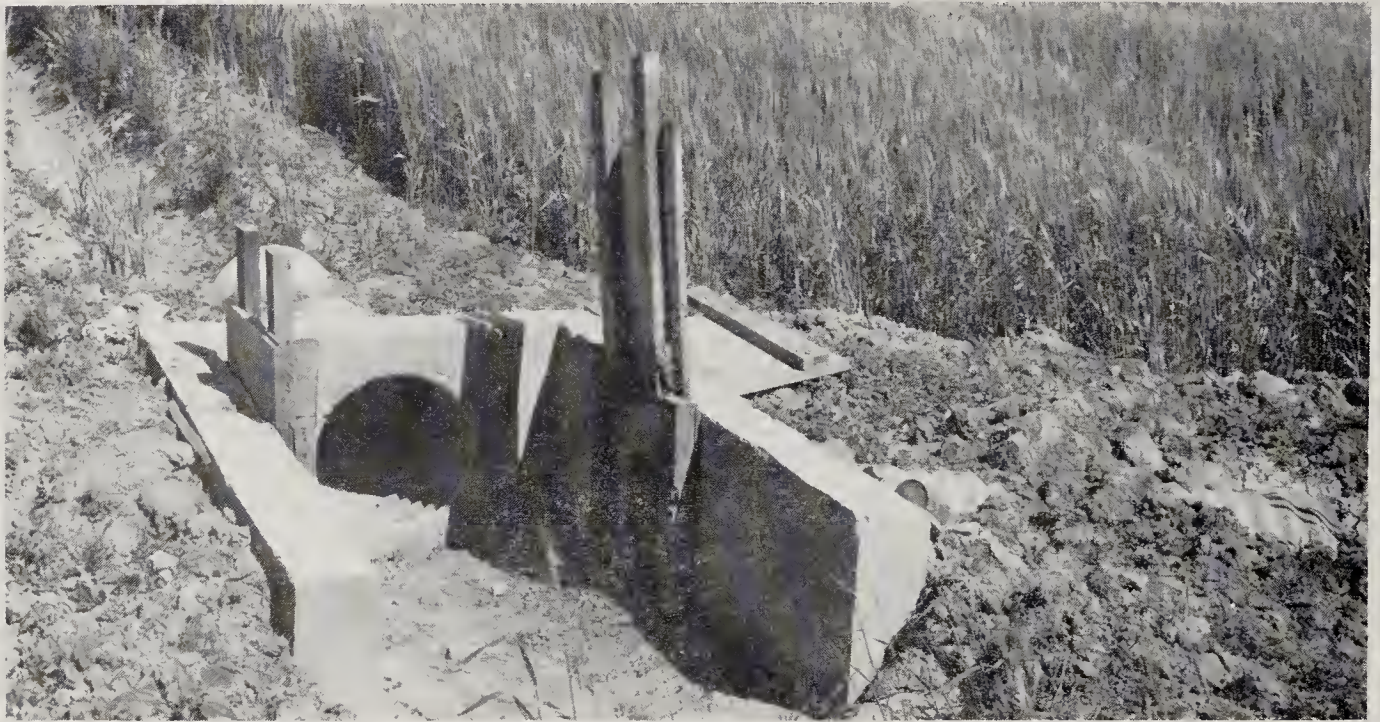
Careful studies of ground water levels by S.C.S. technicians and construction of recommended drain ditches have helped some of the worst problem areas and permitted profitable farming operations where there was only poor crop or pasture land. There are still many places where drainage is badly needed.

Altogether 45 miles of farm drains have been constructed in the district benefiting 4,536 acres of land. The pictures shown above are of drains which have given satisfactory results.





**Pump Irrigation on the Leonard Cook Farm at Manchester.**



**Division Box Constructed of Concrete and Corrugated Pipe on Christensen Bros. Unit.**

### **REORGANIZATION OF IRRIGATION SYSTEMS**

Many farm distribution systems were poorly laid out originally. Reorganizing them after careful surveys had been made cut down the labor and time required for irrigation and also reduced over-watering.

The installation of drops and new structures in field laterals were very helpful in a number of instances.

Altogether since the district began operations there have been 2,606 acres of new land placed under irrigation and the application of irrigation water has been improved on 12,232 acres.

The two pictures above illustrate some of the work done.





**Border Dike Irrigation. Note the Low, Easy to Cross Borders on the Left and Right Sides of the Picture and Uniform Application of Water.**



**Ernest Blackburn Irrigating a Field of Sugar Beets With Siphon Tubes.**

### IMPROVED WATER APPLICATION

Proper application of irrigation water increases crop yields, reduces labor costs and saves water. In the past most of the irrigation has been by wild flooding because of the unevenness of the land.

After the land has been leveled, border dikes can be installed on the flat slopes and properly spaced contour ditches on the steeper slopes. Leveling also permits easier irrigation of row crops.

Soil surveys provide information on water requirements of the different soils. This information helps in developing the most efficient irrigation system for a farm.

The two pictures on this page show water being properly controlled by use of border dikes and siphons. Although much land has been leveled and border dikes installed, there is a great deal to be done in proper water management, such as length of run, frequency and amounts of water needed.





**Brush Land on Zeller Farm Before Clearing.**



**Same Land After Clearing and Leveling.**

### LAND CLEARING

Strangely enough some of the lands having the best soils were in timber or brush at the time the district was organized. Soil classification by S.C.S. soil scientists showed where clearing was feasible and 522 acres have been cleared, leveled and farmed.

The pictures on this page show the before and after of some of the cleared areas.





**A Five Year Alfalfa-Small Grain Rotation Helps Maintain Fertility on Leonard Cook Farm.**



**Alfalfa and Corn Provide Silage and Hay for Livestock Feeder Operations on Robinson Brothers Farm.**

### **BETTER FARMING**

Not the least by any means of the accomplishments of the district in the past ten years is the improvement in cropping practices which has taken place, particularly in the way of better crop rotations.

The seeding of brome grass with alfalfa, more frequent plowing of hay fields in the rotation, and the establishment of irrigated pastures are some of the most significant changes. The application of increased amounts of commercial fertilizer has done much to improve yields as most of the soils in the district are deficient in phosphorus and nitrogen.

Better irrigation and drainage along with better crop rotations and adequate fertilization have raised production. This has helped many of our farmers in offsetting the difficult period of lower prices and higher costs which we are experiencing.

The pictures shown above illustrate some of the fine crops being raised in the district.





**Town of Sun River During 1948 Flood.**

## FLOOD CONTROL

The Sun River Valley has always been subject to periodic flooding. The two pictures shown were taken at and near the town of Sun River during the 1948 flood when the spring snow melt coincided with a period of heavy rainfall in the mountains. In 1953 a similar situation was brought about by heavy rainfall on the plains east of the mountains at the same time the snow was going out.

Floods like those of 1948 and 1953 cause heavy damage in the district both to crops and property, and there is some damage from high water in the spring of most years. The present Gibson Dam on the North Fork of the Sun River affords little protection because it was built only for storage of irrigation water with inadequate volume capacity for any effective flood control.

The proposed Sun Butte Dam on the North Fork of the North Fork of the Sun River operated in conjunction with the Gibson Dam would reduce flood hazards greatly by supplying storage space for a large amount of water during peak runoff periods. The danger of an



occasional flood in periods of extra heavy rainfall would still exist but the height of the flood crests would be substantially less, and in most years damage from high water would be completely averted.

The Sun Butte Dam is a controversial matter because while the dam itself would be outside the 900,000 acre Bob Marshall Wilderness Area, 2,500 acres of the reservoir would be in it. Recreational and sportsman groups are opposed to any intrusion of the area.

We are not going to argue the case in this booklet. All the facts and viewpoints of the various Government agencies involved will be presented in a report eventually.

Suffice it to say we are convinced the construction of this dam for water conservation and flood control would be the most beneficial thing which could be done for the future welfare of the people in the district who operate in the river valley.



**Flooded Farm Land Above Town of Sun River.**





**River Bank Erosion Below Town of Sun River.**



**This Sloped Bank and Rock Rip-Rap Installed by the Fort Shaw Irrigation District Effectively Controls River Bank Erosion.**

### **RIVER BANK EROSION**

Without any doubt the washing away of soil by the Sun River is one of the most serious questions facing the district for the future. The two pictures on this page show the results of river bank erosion and one of the best methods for controlling it by sloping the banks and rip-rapping them with heavy rock.

Rip-rapping exposed banks is difficult and so expensive in many instances as to be totally beyond the means of the operator. Very little if any erosion to river banks takes place during low or moderate runoff periods. High water does the damage.

Obviously the only satisfactory answer is control of the flows of the river to eliminate high water to the fullest possible extent. Here again, the need of the Sun Butte Dam for storage of peak flows becomes apparent.

Better control of the river, together with rip-rapping wherever it is practical, are the best solutions we know of to the problem of preventing the eventual loss of much of the best soil in the area adjacent to the river.



## IN RECOGNITION

The Board wishes to acknowledge and thank the following men for the services they rendered as supervisors of the Sun River Soil Conservation District.

William Purvis (deceased)	-	-	-	-	1944-47
Clay Rushton	-	-	-	-	1944-47
Ted Lee	-	-	-	-	1944-47
William Love	-	-	-	-	1947-53
Kenneth McIver	-	-	-	-	1947-53



≡ OUR SOIL ★ OUR STRENGTH ≡



## An Eleventh Commandment

“Thou shalt inherit the Holy Earth as a faithful steward, conserving its resources and productivity from generation to generation. Thou shalt safeguard thy fields from soil erosion, thy living waters from drying up, thy forests from desolation, and protect thy hills from overgrazing by thy herds, that thy descendants may have abundance forever. If any shall fail in this stewardship of the land, thy fruitful fields shall become sterile, stony ground and wasting gullies, and thy descendants shall decrease and live in poverty or perish from off the face of the earth.”

—Walter Clay Lowdermilk

